

**CLAIMS**

1. An apparatus for fixing photocurable inks, comprising:

a light source for irradiating light for fixation to a recording side of  
5 a recording medium printed with photocurable ink;

a fixing member which is disposed in a conveyance path of the  
printed recording medium, is formed in a cylindrical shape, and can  
transmit the light for fixation;

a conveying member disposed so as to face the fixing member over  
10 the conveyance path; and

a pressurizing unit for nipping the fixing member and the conveying  
member,

wherein the recording medium is conveyed between the fixing  
member and the conveying member nipped by the pressurizing unit, the  
15 fixing member and the recording side of the recording medium are made  
come into tight contact with each other, and a contact part between the  
fixing member and the recording side of the recording medium is irradiated  
by the light for fixation which transmits the fixing member to thereby  
cure/fix the photocurable ink printed on the recording side of the recording  
20 medium.

2. The apparatus for fixing photocurable inks according to claim 1,

wherein each of the fixing member and the conveying member is supported  
so as to be rotatable around its rotary shaft, the rotary shaft is disposed in

25 a direction orthogonal to a conveyance direction of printed recording  
medium, and overall length in the rotary shaft direction is equal to or  
larger than width in the direction orthogonal to the conveyance direction of

the recording medium.

3. The apparatus for fixing photocurable inks according to claim 1,  
wherein peripheral velocity of each of the fixing member and the  
5 conveying member is equal to conveyance speed of printed recording  
medium.

4. The apparatus for fixing photocurable inks according to claim 1,  
wherein the light source is disposed on the outside of the fixing member,  
10 and the light for fixation is incident on the fixing member from the side  
opposite to the nipped part of the fixing member and the conveying  
member, transmits the fixing member, and the contact part between the  
fixing member and the recording side of the recording medium is irradiated  
by the light for fixation.

15 5. The apparatus for fixing photocurable inks according to claim 1,  
further comprising a condensing unit which condenses the light for  
fixation,

wherein the condensing unit is disposed between the light source  
20 and the fixing member and condenses light for fixation emitted from the  
light source so as to be incident on the fixing member.

6. The apparatus for fixing photocurable inks according to claim 1,  
wherein the fixing member is formed in a cylindrical shape, the light  
25 source is disposed in the fixing member, and the contact part between the  
fixing member and the recording side of the recording medium is irradiated  
by the light for fixation which transmits the fixing member.

7. The apparatus for fixing photocurable inks according to claim 1, wherein the fixing member is made of a material which can transmit light whose wavelength lies from 200 nm to 1,300 nm.

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8. The apparatus for fixing photocurable inks according to claim 1, wherein the fixing member is made of quartz glass.

9. The apparatus for fixing photocurable inks according to claim 1,  
10 further comprising:  
a driving unit which rotates the fixing member,  
wherein the fixing member conveys the recording medium by being rotary driven by the driving unit.

15 10. The apparatus for fixing photocurable inks according to claim 1, wherein  
the light for fixation is ultraviolet light, and the photocurable ink is ultraviolet-curing radical polymerization ink.

20 11. A method for fixing photocurable inks, comprising the steps of:  
conveying a recording medium printed with light-transmitting ink in a conveyance path while nipping a fixing member which is disposed in the conveyance path of printed recording medium, is formed in a cylindrical shape, and can transmit light for fixation and a conveying  
25 member disposed so as to face the fixing member over the conveyance path by a pressurizing unit, and making the fixing member and a recording side of the recording medium come into tight contact with each other; and

irradiating the light for fixation, which transmits the fixing member, to a contact part between the fixing member and the recording side of the recording medium to thereby cure/fix the photocurable ink printed on the recording side of the recording medium.

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12. The method for fixing photocurable inks according to claim 11, wherein the light source is disposed on outside of the fixing member, and the light for fixation is incident on the fixing member from the side opposite to the nipped part of the fixing member and the conveying member, transmits the fixing member, and whereby the contact part between the fixing member and the recording side of the recording medium is irradiated by the light for fixation.

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13. The method for fixing photocurable inks according to claim 11, wherein

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a condensing unit for condensing the light for fixation is disposed between the light source and the fixing member, and

the condensing unit condenses the light for fixation emitted from the light source so as to be incident on the fixing member.

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14. The method for fixing photocurable inks according to claim 11, wherein the contact part between the fixing member and the recording side of the recording medium is irradiated by the light for fixation which transmits the fixing member and is irradiated from the light source disposed in the fixing member formed in a cylindrical shape.

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15. A printing apparatus comprising:

a printing unit which performs printing on a recording side of a recording medium with photocurable ink;

a light source for irradiating light for fixation to the recording side of the recording medium printed by the printing unit;

5 a fixing member disposed in a conveyance path of the printed recording medium, and which is formed in a cylindrical shape, and transmit the light for fixation;

a conveying member disposed so as to face the fixing member over the fixing member; and

10 a pressurizing unit for nipping the fixing member and the conveying member,

wherein the recording medium is conveyed between the fixing member and the conveying member nipped by the pressurizing unit, the fixing member and the recording side of the recording medium are made  
15 come into tight contact with each other, and a contact part between the fixing member and the recording side of the recording medium is irradiated by the light for fixation which transmits the fixing member to thereby cure/fix the photocurable ink on the recording side of the recording medium.

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16. The printing apparatus according to claim 15,

wherein the printing unit forms an image with the photocurable ink on an outer peripheral side of the fixing member,

the recording medium is conveyed between the fixing member  
25 having the outer peripheral side on which the image is formed with the photocurable ink and the conveying member which are nipped by the pressurizing unit, and

while transferring the photocurable ink onto the recording side of the recording medium, the photocurable ink transferred on the recording side of the recording medium is cured/fixed.